BULL. BOT. SURV. INDIA
Vol. 19, Nos. 1-4 : pp. 309-314, 1977

STUDIES ON PTERIDOPHYTES IN THE BOTANICAL SURVEY OF INDIA

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Before taking up the question of studies on the Indian pteridophytes in the Botanical Survey of India, it is useful to make a short review of the contribution of the several pioneer workers, who have contributed to the knowledge of pteridophytes in our country. Amongst these may be mentioned Roxburgh, Clarke, Beddome, Hope and Haines. Roxburgh whose "Flora Indica" included flowering plants only, had also studied ferns and this was published by Griffith (1844). His account included 22 genera and 148 species of ferns and fern-allies. Clarke (1874) in his reprint of Carcy's edition of Roxburgh's "Flora Indica" has included Roxburgh's fern account also. Clarke (1880) in his work on the ferns of Northern India included 363 species of ferns, 12 of club mosses and 4 of horsetails. Of the 379 species of pteridophytes included by him (l.c.) "88 are confined to North-Indian region, 149 species occur in Himalayas West-ward to Nepal and 269 species occur East-ward to Nepal, the eastern region of Khasia and Chittagong has afforded 258 species, while 52 species occur in the plains" Clarke (l.c.) described 27 species of ferns new to science in his treatment. Beddome with his three publications (1864, 1866, 1883, 1892) has remained a well recognised figure in the history of fern studies in our country. His "Handbook of ferns of British India and Malay Peninsula" remains even today a basic reference work on the subject. Haines (1924) in his floristic work on the Botany of Bihar and Orissa included 87 species under 40 genera comprising of 12 families. Of these, 56 species are reported from Bihar, and 6 species from Orissa whereas 25 species are common to Bihar and Orissa. Burkill (1925) enumerated species of *Selaginella* from Abor hills (Arunachal Pradesh). Biswas (1939) published two new species of *Elaphoglossum* from India and later (1944) dealt with the tree ferns of the Eastern Himalayas.

Botanical Survey of India was revived in the year 1956, to gather detailed knowledge of the plant wealth of the country. Various scientific workers while making general plant collections during plant explorations have given some attention to pteridophytes particularly because of their beautiful foliage forms and in some cases stately bearing, like the tree ferns. Of these Panigrahi at Shillong published (1961) enumeration of pteridophytes of Eastern India, following Copeland's (1947) system of classification. This included 162 species covering 32 genera and 16 families from Eastern India. Panigrahi and Patnaik studied cytology and taxonomy of polypodiaceae from Eastern India. Panigrahi and Dixit at Allahabad revised six families for India i.e. Selaginellaceae : 30 species; Schizaeaceae : 3 genera, 7 species; Ophioglossaceae : 3 genera 18 species; Osmundaceae : 1 genus, 6 species; Gleicheniaceae : 2 genera, 4 species and 7 vars., Marattiaceae: 3 genera, 3 species, Panigrahi continued his interest in ferns with the revision of *Pityrogramma* and some nomenclatural aspects in *Thelypteris* etc. Amongst others who could be mentioned for their contributions in this field are Subramanyam *et al.* (1960, 1961), and Balakrishnan *et al.* (1960, 1964). Ferns and fern-allies of the Andaman and Nicobar Islands received attention of Thothathri *et al.* (1969, 1970). Ghatak too has made some contributions by his studies on *Adiantum* and *Lycopodium*. He made collections of fern and fern-allies from the Shevaroy hills of Tamil Nadu.

The study of pteridophytes in the Botanical Survey of India came into its own with the establishment of the Cryptogamic Unit in 1966 with Dr. N. C. Nair as Regional Botanist (Cryptogams). He worked single handed upto 1973 and made extensive collections from Orissa and the southern parts of the Western Ghats (Kerala). The study of these collections is in progress. The preliminary studies indicate the presence of 189 species representing 66 genera comprising 32 families in Kerala. Similarly, 95 species are accounted from Orissa against 231 species reported by Haines (1924) from the region. Apart from the explorations and general collection revisionary studies were also taken up. Nair (1972) revised the genus *Pteridium* Gledit. ex Scop. 2 species for the Indian subcontinent. Nair and Ghosh (1975) revised the genus *Pityrogramma* Link, 2 species for the Indian region. Dixit and Nair revised the family Vittariaceae, in India, comprising of 2 genera and 24 species. They have reported 16 species of the genus *Vittaria* J. Smith against three reported by Beddome (1892), eight by Ching (1931) and seven by Bir (1961) from the Indian region, of which 4 species are reported as new records for India and 2 species have been discovered new to science. Nair and Das (1974 a, b, c, 1977) studied the venation pattern in *Pteris* and *Adiantum* species. Recently Dixit and Das (1975, 1977) took up the revisionary work on the genus *Coniogramme* Fée in India. They have reported 14 species against one by Beddome (1892) and six by Mehra and Bir (1964). Three species have been reported as new records for India. One species and one variety have been discovered as new to science. In all seven new species and two new varieties of ferns have been discovered. A number of new records of species of ferns and a few papers on nomenclature changes have been published. Amongst the new records for India the most interesting are two polypodiaceous fern genera, *Drymotaenium* Makino and *Holcosorus* Moore, which have been reported from Arunachal Pradesh of Eastern India (Dixit and Nair, 1975, 1977).

Revisionary studies on various genera of pteridophytes have been undertaken by various workers of this department, and work is in progress. The genera currently under revision are *Selaginella* P. Beauv., *Lycopodium* L. (Dixit), *Plagiogyria* (Kunze) Mett. (Dixit and Das) *Lindsaea* Dryander (Dixit and Ghosh).

The pteridophytic collections in the Cryptogamic herbarium (CAL) were originally arranged as per the system and sequence adopted by Hooker and Baker in their "Synopsis Filicum" (1868). These collections have been reorganised in accordance with "A new generic sequence for the pteridophytic herbarium" proposed by Crabbe *et al.* (*Fern Gaz.* 11 (2 & 3) : 141-162. 1975). Further with an accumulation of duplicate collections from the various circle herbaria and their disposition, it is proposed to modify the present system of arrangement in accordance with the system of classification and arrangement proposed by pichi-Sermolli [*Webbia* 31 (2): 313-515. 1977]. As one of the World herbaria, it contains in addition to Indian material, pteridophytes collected from surrounding parts of India and the other countries of the world.

The present holdings are about 2,000 species under 185 genera. Amongst these are to be mentioned 175 Wallichian sheets and 70 types and 40 photographs of the Type material. Other important collections are Henry's from China and Thawaite's from Sri Lanka.

Apart from the incidental inclusion of ferns and fern-allies in general works on floras and plants of local areas, the workers of Botanical Survey of India have published specially on pteridophytes. The following bibliography includes a list of practically all such publications.

ACKNOWLEDGEMENTS

Grateful thanks are due to Dr. S. K. Jain, Director, Botanical Survey of India for the encouragement and interest. I am also thankful to Dr. A. S. Rao, Joint Director and Dr. J. N. Vohra, Regional Botanist (Cryptogams) for going through the manuscript and helpful suggestions.

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